

AMENDMENT TRANSMITTAL LETTER (Large Entity)Applicant(s): **Barringer et al.**

Docket No.

POU920010111US1

Serial No.

09/942,306

Filing Date

August 29, 2001

Examiner

T. Nguyen

Group Art Unit

2833

Invention:

PLUGGABLE PLANAR BOARD

APR 18 2002

TO THE ASSISTANT COMMISSIONER FOR PATENTS:

Transmitted herewith is an amendment in the above-identified application.

The fee has been calculated and is transmitted as shown below.

CLAIMS AS AMENDED

| | CLAIMS REMAINING AFTER AMENDMENT | HIGHEST # PREV. PAID FOR | NUMBER EXTRA CLAIMS PRESENT | RATE | ADDITIONAL FEE |
|--|-------------------------------------|-----------------------------|--------------------------------|---------|-------------------|
| TOTAL CLAIMS | 6 - | 20 = | 0 x | \$18.00 | \$0.00 |
| INDEP. CLAIMS | 1 - | 3 = | 0 x | \$84.00 | \$0.00 |
| Multiple Dependent Claims (check if applicable) <input type="checkbox"/> | | | | | \$0.00 |
| TOTAL ADDITIONAL FEE FOR THIS AMENDMENT | | | | | \$0.00 |

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Signature

Dated:

April 11, 2002

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Susan L. Phelps

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IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Barringer et al. : GROUP ART UNIT 2833

Serial No. 09/942,306 : Examiner Nguyen, T.

Filed: August 29, 2001 : April 11, 2002

5 Title: **PLUGGABLE PLANAR BOARD** : Lawrence D. Cutter
: Intellectual Property Law
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APR 22 2002
TECHNICAL STAFF, 12600

AMENDMENT

10 Assistant Commissioner of Patents
Washington DC 20231

Sir:

15 In response to the Office Action dated January 28, 2002,
reconsideration of the rejection of applicants' claims 1-6 is
respectfully requested.

20 At present, claims 1-6 stand rejected under 35 USC § 103(a)
based upon the patent to Acki et al. (U.S. Patent No. 6,298,911
issued September 11, 2001, with a filing date of February 18,
1999) in view of a second patent to Sasaki (U.S. Patent No.
5,329,422 issued July 12, 1994, with a U.S. priority date of

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Susan L. Phelps

Date of Signature

October 29, 1991). In view of the comments presented below, this rejection is respectfully traversed. Accordingly, claims 1-6 remain pending in the present application.

Briefly, and for the convenience of the Examiner, it is noted that applicants' invention is generally directed to a pluggable planar circuit board. In particular, applicants' circuit board typically receives pluggable printed circuit cards for mechanical and electrical connection therewith. Accordingly, in accordance with applicants' intended invention, there is provided a planar circuit board which is capable of containing printed circuit cards which may be inserted into the board and also in which the board itself with the cards in place may be plugged into and removed from a separate cabinet frame structure. Because of the relatively large size of a printed circuit board, as opposed to a printed circuit card, maintenance of stiffness and the ability to provide other advantages, such as EMI protection, are very desirable features. With regard to these specific aspects of the claimed invention, the Examiner's attention is particular directed applicants' Figure 7. Additionally, applicants' Figures 6, 8, 9, and 10 are also illustrative. It is particularly noted that the present invention contemplates the capability of inserting and removing an entire planar circuit board even when it is fully populated with printed circuit cards. In this regard, it is also pointed out that since applicants' claims are specifically directed to a printed circuit board, as opposed to say a printed circuit card, certain problems manifest themselves. In particular, since it is desirable to be able to insert and remove such boards even when fully populated, it is noted that these boards tend to be large, heavy structures. Furthermore, since the boards contain a number of printed circuit cards inserted therein, there is a concomitantly larger number of electrical circuits associated with a printed circuit board, as opposed to a printed circuit card. Accordingly, as a result of

this fact, the number of mating pins or other connectors that are employed at the board level is higher. Correspondingly, the required degree of force associated with insertion and removal operations is much higher.

5 Accordingly, in order to solve all of the above-identified problems, applicants have devised a circuit board assembly which comprises a printed circuit board having an electrical connector disposed along one of its edges together with a non-conductive base which is substantially coextensive with the printed circuit
10 board. Additionally, applicants have provided a stiffener which is disposed on the side of the above assembly opposite to the non-conductive base. This stiffener is also substantially coextensive with the printed circuit board. It is to be particularly noted that this assembly of three components is
15 intended for insertion and removal together as a single unit. It is also noted that in preferred embodiments of the present invention, the stiffener also acts to provide EMI shielding.

 Attention is now directed to the patents which the Examiner has used as a basis for the asserted rejection. In particular,
20 attention is first directed to the patent to Aoki et al. This patent is solely directed to structures for insertion and removal of printed circuit cards. There is nothing contained within the patent to Aoki et al. which would teach, disclose, or even suggest that the part into which the cards are inserted is in any
25 way movable or removable. Furthermore, what the Examiner refers to as metal stiffener 61 (see column 4, lines 51-57) refers to a frame or a cabinet which is in fact not even part of what Aoki et al. consider to be part of anything construable as being a circuit board. Rather, it is merely an entirely separate cabinet
30 into which their cards are inserted. It is also clear from Figure 5 and Figures 7a-7d from the patent to Aoki et al. that, even if one were to construe frame number 61 as a stiffener, it

is clear that it is in no way whatsoever "substantially coextensive" with the printed circuit board. In contrast to what is specifically claimed and described in applicants' specification, Aoki et al. teach that frame 61 lies along an edge of their board and would not in any way operate or serve to prevent undesirable flexure from occurring. All of this is in addition to the fact that as far as Aoki et al. are concerned, frame 61 is part of the cabinet and not part of the board at all. Even if one were to construe and interpret the patent to Aoki et al. as teaching that their board 15 is itself movable or pluggable, it is nonetheless clear that it would be movable or pluggable with respect to fixed frame 63 including frame number 61. Accordingly, it is seen that the teachings of Aoki et al. do not in fact in any way appreciate the problem solved by the presently claimed invention.

Attention is next directed to the patent to Sasaki. This patent is directed to notebook or lap-type portable computer devices. Apart from the fact that it is an electronic device with a printed circuit card, there is little or no resemblance between the teachings of Sasaki and those of the present applicants. In particular, it is noted that Sasaki does not appear to characterize reference numeral 4 as anything other than a case which surrounds printed circuit board 8. Sasaki in fact teaches that the printed circuit board and the case are entirely separate components. Sasaki does not appreciate, discern, nor suggest that any form of edge connection is employed. The only relative motion taught by Sasaki is the placement of printed circuit board 8 within case 4. Furthermore, when it comes to the specific teachings of Sasaki, the Examiner's attention is directed to Sasaki's claim 1 wherein there is a specific requirement that a non-conductive portion includes side walls which are continuous with the base. Accordingly, by the very teachings of Sasaki, edge connection operations are precluded.

It is also clear from the patent to Sasaki that the particular problems associated with applicants' claimed invention are not appreciated.

Assuming, solely for the sake of argument, that the teachings
5 of the two cited patents could be properly combined, it would
nonetheless be the case that any non-conductive support from
Sasaki would surround the printed circuit board and preclude
edge-wise connection. It is also the case that the combined
10 teachings would be such that anything that the Examiner alleges
operates as a stiffener would likewise be disposed on the sides
of the board and thus fail its basic purpose as provide in
applicants' specification, namely, that of providing a pluggable
and removable printed circuit board. Furthermore, the combined
15 teachings would not result in any kind of inclusion of a
stiffener which would be "substantially coextensive with said
printed circuit board."

Thus, while there is a cursory similarity, the cited art fails
to teach, disclose, or suggest significant features of the
claimed invention such as the stiffener being disposed so as to
20 be substantially coextensive with the printed circuit board.

Furthermore, the combined teachings which the Examiner asserts
would be such that case 4 from Sasaki would surround the device
and thus preclude edge-on insertion. In point of fact, it
further appears to be the case that there is nothing in the cited
25 art which teaches the existence or desire to have a circuit board
(as opposed to a printed circuit card) having an edge connector.
There is likewise nothing in the cited art which teaches,
discloses, or suggests that a printed circuit board, especially a
fully populated one already containing printed circuit cards
30 inserted therein, can exist as a separate article of manufacture
which may be inserted or removed at will in much the same manner

as a printed circuit card can be inserted or removed. In this regard, it is clear that the cited art fails to appreciate the problems solved by the present invention.

It is further noted that, apart from applicants' own specification, there is nothing contained in either of the two cited patents which would suggest their combination. In this respect, it is clear that Sasaki is directed to a notebook computer. On the other hand, the patent to Aoki et al. is directed towards desktop systems having pluggable cards. Neither system teaches, discloses, or suggests the desire or utility for having pluggable boards. Those skilled in the computer arts fully understand that desktop and notebook computer devices typically include only one "mother board" and that it is not a removable part. Neither cited patent contemplates the specific problems associated with circuit board pluggability.

In view of the arguments above being applicable to claim 1, they are equally applicable to the claims which depend therefrom. Accordingly, it is unnecessary to further comment upon the Examiner's statement with respect to claims 4, 5, and 6.

From the above, it should therefore be appreciated that applicants' invention is indeed fully patentable over the art cited. Accordingly, the withdrawal of the rejection of applicants' claims 1-6 under 35 USC § 103 is respectfully requested.

Accordingly, it is now seen that all of the applicants' claims are in condition for allowance. Therefore, early notification of the allowability of applicants' claims is earnestly solicited. Furthermore, if there are any matters which the Examiner feels could be expeditiously considered and which would forward the prosecution of the instant application, applicants' attorney

wishes to indicate his willingness to engage in any telephonic communication in furtherance of this objective. Accordingly, applicants' attorney may be reached for this purpose at the numbers provided below.

5

RESPECTFULLY SUBMITTED,

April 11, 2002

DATE

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